

**AMENDMENTS TO THE CLAIMS**

1. (Currently Amended) A method of forming a ~~single~~ structure attached to a micro-fluidic channel, ~~using a hydrodynamically focused solidifiable fluid and a focusing fluid; the method comprising:~~

~~introducing a the hydrodynamically focused solidifiable fluid [[and]]~~

into a micro-fluidic channel,

wherein the solidifiable fluid comprises a binding material;

introducing a the focusing fluid into the micro-fluidic channel;

hydrodynamically focusing the solidifiable fluid using the focusing fluid; and

solidifying polymerizing a portion of the hydrodynamically focused solidifiable fluid by selectively exposing the portion to an electromagnetic radiation; and

forming a structure.

~~forming the single structure by both hydrodynamic focusing and lithography by forming a first dimension of the single structure based on hydrodynamic focusing and forming a second dimension of the single structure based on lithography;~~

~~wherein the first dimension and the second dimension are created in different portions of the single structure.~~

2. (Currently Amended) The method of claim 1, wherein ~~the solidifying step forming the single structure~~ comprises solidifying the hydrodynamically focused solidifiable fluid inside the channel.

3. (Currently Amended) The method of claim 2, wherein ~~the solidifying step solidifying~~ comprises polymerizing the hydrodynamically focused solidifiable fluid ~~by heat rather than the~~

electromagnetic radiation.

4. (Currently Amended) The method of claim 3, wherein the electromagnetic radiation comprises an further comprising promoting polymerization by exposing the hydrodynamically focused solidifiable fluid to ultraviolet radiation.

5. (Canceled)

6. (Currently Amended) The method of claim 1, wherein forming the single structure comprises forming a coating plurality of coatings attached to walls of the channel.

7. (Currently Amended) The method of claim 6, wherein forming the coating[[s]] comprises forming a coating having a greater compatibility than that of the wall of the channel.

8. (Original) The method of claim 7, wherein forming the coating having the greater compatibility comprises forming a coating having a greater biocompatibility than that of the wall of the channel.

9. (Currently Amended) The method of claim 8, wherein forming the biocompatible coating comprises forming a biocompatible anti-fouling coating and wherein the solidifiable fluid comprises an anti-fouling material rather than a binding material.

10. (Original) The method of claim 9, further comprising flowing a fluid containing a biological molecule in the channel containing the biocompatible anti-fouling coating.

11. (Canceled)

12. (Currently Amended) The method of claim 8, further comprising:  
flowing a fluid containing a biological molecule in the channel containing the biocompatible affinity coating; and  
binding the biological molecule to the binding [[.]] material of the biocompatible affinity

coating.

13. (Currently Amended) The method of claim 1, wherein forming the single structure comprises forming an internal divider wall.

14. (Original) The method of claim 13, further comprising tailoring a permeability of the divider wall to a molecule.

15. (Original) The method of claim 14, further comprising performing a separation by permeating the molecule across the internal divider wall.

16. (Canceled)

17. (Currently Amended) The method of claim 1, wherein forming the single structure comprises forming a pillar having a width that is based on hydrodynamic focusing and a length that is defined by a base ~~based on~~ the patterned mask.

18. (Canceled).

19. (Currently Amended) A method of forming a single structure attached to a micro-fluidic channel ~~having a first dimension and a second dimension~~, the method comprising: introducing a solidifiable polymerizable fluid and a focusing fluid into a hydrodynamic focusing system having a micro-fluidic channel,

wherein the solidifiable fluid comprises dissolvable nanoparticles;

hydrodynamically focusing the solidifiable polymerizable fluid with the focusing fluid within the micro-fluidic channel; and

solidifying polymerizing a portion of the hydrodynamically focused solidifiable polymerizable fluid by selectively exposing the portion to an electromagnetic radiation to form a ~~forming the single~~ structure

~~by both hydrodynamic focusing and lithography by forming a first dimension of the single structure based on hydrodynamic focusing and forming a second dimension of the single structure based on lithography;~~

~~wherein the first dimension and the second dimension are created simultaneously in different portions of the single structure.~~

20-21. (Canceled).

22. (Currently Amended) The method of claim 19, wherein forming the ~~single~~ structure comprises forming a pillar having a width that is based on hydrodynamic focusing and a length that is defined by a patterned mask based on lithography.

23. (Currently Amended) The method of claim 19, wherein forming the ~~single~~ structure comprises forming a plurality of coatings attached to walls of the channel.

24. (Currently Amended) The method of claim 19, wherein forming the ~~single~~ structure comprises forming an internal divider wall.

25. (Currently Amended) The method of claim 24 [[19]], further comprising performing a separation by permeating a molecule across the internal divider wall.

26-33. (Canceled).

34. (New) The method of claim 19, wherein the solidifying step comprises polymerizing the solidifiable fluid inside the channel.